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Correlation between job satisfaction and musculoskeletal disorders among academic staff of universities in Benue State: A theoretical narrative

Williams Terhemen Yongu[1]*, Targema Iorvaa[2], Sarah Ngukuran Burbwa[2], Orfega Zwawua[2] and Michael Enokela Efu[3]

[1] Department of Surgery, College of Health Sciences, Benue State University, Gboko Road, Walmayo, Makurdi 970101, Benue State, Nigeria.
[2]Department of Human Kinetics and Health Education, Benue State University, Gboko Road, Walmayo, Makurdi 970101, Benue State, Nigeria.
[3]Federal University of Health Sciences, Otukpo, Benue State, Nigeria.

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This study investigates the correlation between job satisfaction and musculoskeletal disorders (MSDs) among academic staff in Benue State, Nigeria. Academics are often exposed to musculoskeletal conditions, such as back pain, neck pain, and carpal tunnel syndrome, due to cognitive demands, sedentary work, and high workloads. While previous research has explored the influence of psychosocial factors on MSDs, limited attention has been given to the relationship between job satisfaction and MSDs within Nigerian universities. A cross-sectional survey was conducted among 355 academic staff from four universities in Benue State: Benue State University, Joseph Sarwuan Tarka University, University of Mkar, and the Federal University of Health Sciences, Otukpo. Data were gathered using a self-administered questionnaire, including the Musculoskeletal Health Questionnaire (MSK-HQ) and a custom job satisfaction Likert scale. Descriptive statistics and Spearman rank correlation were used for analysis, with significance set at $p < 0.05$. The study found a significant inverse relationship between job satisfaction and MSD prevalence, indicating that higher job satisfaction correlates with lower musculoskeletal pain. The results align with models such as the Job Demand-Control (JDC) and Effort-Reward Imbalance (ERI), which emphasize the importance of job control and perceived rewards in reducing workplace stress and musculoskeletal strain. These findings underscore the importance of addressing psychosocial factors like workload and support systems to enhance job satisfaction and mitigate MSDs among academic staff in Nigeria. The study provides insights into improving occupational health in Nigerian academic institutions, potentially enhancing staff well-being and productivity.

Key words: Musculoskeletal disorders (MSDS), musculoskeletal conditions, Musculoskeletal Health Questionnaire (MSK-HQ).

INTRODUCTION

Job satisfaction is a critical factor influencing the well-being and productivity of employees across various sectors. Among academic staff, the nature of work involves high cognitive demands, extensive sedentary activity, and increased workload, all of which may contribute to the development of musculoskeletal disorders (MSDs) (Fatudimu et al., 2022; Erick and Smith, 2014). MSDs, which encompass conditions

affecting muscles, bones, and joints, are common among individuals with prolonged sitting, repetitive tasks, and stress—often seen in academic environments (Hoe et al., 2018).

These disorders can lead to chronic pain, reduced mobility, and decreased work performance, potentially impacting both personal health and institutional productivity. In Nigeria, particularly in Benue State, academic staff faces unique challenges that could influence both their job satisfaction and musculoskeletal health. Factors such as workload, job control, social support, and the physical environment within universities play a pivotal role in shaping job satisfaction, which may, in turn, impact the prevalence of MSDs. Previous studies have highlighted the relationship between psychosocial work factors and musculoskeletal disorders, yet there is limited research examining the specific correlation between job satisfaction and MSDs among academic staff in this region (Bezzina et al., 2023). This study seeks to fill this knowledge gap by providing a theoretical narrative and analyzing the correlation between job satisfaction and musculoskeletal disorders among academic staff in universities in Benue State. By examining this underexplored relationship, the study aims to offer insights into how improving job satisfaction could serve as a potential intervention for reducing the incidence of MSDs within the academic workforce, thereby enhancing employee well-being and promoting better occupational health practices.

Theoretical perspectives

The Job Demand-Control (JDC) Model, developed by Karasek (1979), provides a useful theoretical lens for understanding the relationship between job satisfaction and MSDs (Portoghese et al., 2020). According to the JDC model, job stress arises when job demands exceed an individual's control over their work. The model posits that jobs with high demands and low control are more likely to lead to stress-related health outcomes, including musculoskeletal disorders. For academic staff, high job demands may include excessive workload, tight deadlines, and the pressure to publish research. Job control refers to the level of autonomy and decision-making freedom the academic staff has in their work environment. The JDC model suggests that when academic staff experience low job control while facing high job demands, they are at a higher risk of developing musculoskeletal disorders due to increased stress levels. Conversely, high job control and job satisfaction may mitigate the adverse effects of job demands, reducing the likelihood of developing MSDs (Portoghese et al., 2020; Karasek, 1979). Another relevant theory is the Effort-Reward Imbalance (ERI) Model by Siegrist, introduced in 1996 (Ren et al., 2019). This model highlights the imbalance between the effort employees put into their work and the rewards they receive. In academia, the perception of inadequate rewards, such as lack of recognition, insufficient salary, and limited opportunities for promotion, can reduce job satisfaction, which may increase stress and contribute to the development of MSDs. This imbalance can create psychological strain, which in turn has physical manifestations, such as musculoskeletal pain.

Conceptual framework

The conceptual framework for this study integrates job satisfaction as the independent variable and musculoskeletal disorders as the dependent variable, with psychosocial factors such as stress and workload acting as mediating variables.

Job satisfaction (Independent variable)

Job satisfaction encompasses multiple dimensions, including work conditions, salary, promotion opportunities, supervision, and recognition. Academic staff with higher job satisfaction is likely to experience lower stress and better physical health outcomes.

Psychosocial factors (Mediating variables)

Workload

The number of tasks, the amount of time required completing them, and the pressure of deadlines can increase stress, which may contribute to the development of MSDs.

Work-life balance

Difficulties in balancing work with personal life can lead to job dissatisfaction and increased stress, exacerbating physical conditions such as MSDs.

Social support

Support from colleagues and supervisors can buffer the effects of job demands, improving job satisfaction and

*Corresponding author. E-mail: Manwilly2002@yahoo.com. Tel: 08023564595.

reducing stress.

Stress

Stress is considered a key mediating variable in the relationship between job satisfaction and musculoskeletal disorders. Higher levels of job dissatisfaction may lead to increased stress, which in turn can result in physical symptoms such as muscle tension and pain.

Musculoskeletal disorders (Dependent variable)

Musculoskeletal disorders refer to conditions that affect the muscles, tendons, nerves, and joints, such as back pain, neck pain, and carpal tunnel syndrome. Academic staffs who report lower job satisfaction are more likely to experience MSDs due to the psychosocial strain associated with their work environment.

Common musculoskeletal disorders among university lecturers

Low back pain (LBP)

Low back pain is one of the most frequently reported MSDs among university academic staff. It is often caused by prolonged sitting in poorly designed chairs that lack adequate lumbar support. Academic staff spend extended periods preparing lectures, grading papers, conducting research, and attending meetings, all of which involve sitting for long durations. Poor posture, inadequate office ergonomics, and stress further contribute to low back pain, which can lead to chronic discomfort and reduced work efficiency. A study in Kenya reported a low back pain prevalence of 64% (Diallo et al., 2019).

Neck and shoulder pain

Neck and shoulder pain are also prevalent among academic staff due to prolonged periods of working on computers, writing, and grading papers. Many university staff members lack access to ergonomic workstations, which forces them into awkward positions that strain the neck and shoulders. Repetitive tasks such as typing, using a mouse, or writing on whiteboards can also lead to muscle tension and inflammation in the neck and shoulder areas, causing pain that may radiate to the upper back (Sadeghian et al., 2014).

Carpal tunnel syndrome (CTS)

Carpal tunnel syndrome, caused by compression of the median nerve as it passes through the wrist, is common among academic staff who engage in repetitive hand and wrist movements. Tasks such as typing, using a mouse, and grading papers place repeated strain on the wrist, leading to symptoms such as numbness, tingling, and weakness in the hands and fingers. Over time, this condition can significantly impair a lecturer's ability to perform academic duties, including typing research papers or using computers for teaching (Rotaru-Zavaleanu et al., 2024).

Tennis elbow (Lateral epicondylitis)

Tennis elbow is another condition that affects university staff, particularly those who frequently engage in repetitive hand and arm movements. It results from inflammation of the tendons on the outside of the elbow due to overuse. Academic staff who spend long hours writing, typing, or using repetitive gestures during lectures may experience pain, weakness, and tenderness in the elbow region. This condition can make everyday tasks, such as lifting objects or turning a doorknob, difficult (Cutts et al., 2019).

Upper back pain

Upper back pain is a common complaint among academic staff, particularly those who spend long hours in static positions. Poor posture, such as slouching or hunching over a desk, contributes to strain on the upper back muscles, leading to discomfort and stiffness. Many academic staff members lack access to ergonomic office furniture, and the combination of stress, long hours, and poor workstation setup exacerbates upper back pain (Susilowati et al., 2022).

Sciatica

Sciatica occurs when the sciatic nerve, which runs from the lower back down the legs, is compressed or irritated. This condition is often the result of prolonged sitting or poor posture, common among academic staff who spend long hours working at desks or lecturing. Sciatica causes sharp, shooting pain that radiates from the lower back to the legs, making movement difficult and painful. It can affect a lecturer's ability to stand or walk for extended periods, which is essential in a teaching environment (Davis et al., 2024).

Hip and knee pain

Hip and knee pain are common among academic staff due to prolonged sitting or standing during lectures. Poorly designed chairs that lack adequate support for the hips can lead to discomfort and stiffness, while standing for long periods can strain the knees. Over time, this can

result in conditions such as osteoarthritis or bursitis, which cause chronic pain and affect mobility. Additionally, frequent walking on hard surfaces, such as university campuses, can exacerbate knee pain (Baker et al., 2018).

Contributing factors to musculoskeletal disorders

Prolonged sitting and poor posture

Academic staff spends a significant portion of their time sitting, whether in lectures, meetings, or working at a desk. Prolonged sitting without adequate breaks can lead to poor posture, which strains the spine, neck, and shoulders. Over time, this strain can result in the development of musculoskeletal disorders (MSDs) such as low back pain, neck pain, and upper back pain (Guduru et al., 2022; Daneshmandi et al., 2017).

Repetitive movements

Tasks such as typing, grading papers, and writing on whiteboards involve repetitive hand and wrist movements that increase the risk of developing conditions like carpal tunnel syndrome and tennis elbow. Academic staff who engage in these repetitive tasks without proper ergonomic support are at a greater risk of developing musculoskeletal disorders (MSDs) (Palmer, 2011).

Poor ergonomics

Many academic staff members lack access to ergonomically designed office furniture and equipment, which forces them into awkward positions that strain their muscles and joints. For example, desks and chairs that are not adjustable can cause staff to sit in positions that place undue pressure on their lower back, neck, and shoulders. Similarly, using laptops without proper support can lead to neck and shoulder pain (Kibria et al., 2024).

Stress

High levels of stress associated with academic work, including meeting deadlines, publishing research, and managing administrative tasks, can contribute to muscle tension and the onset of musculoskeletal pain. Stress-induced muscle tension often affects the neck, shoulders, and back, leading to conditions such as tension headaches and chronic pain (Harithasan et al., 2022).

Impact of musculoskeletal disorders on academic staff

Musculoskeletal disorders can have a significant impact on the health and productivity of university academic staff. Chronic pain and discomfort can reduce their ability to focus on teaching, research, and administrative tasks. MSDs may also lead to absenteeism or presenteeism, where staff are physically present but unable to perform at full capacity due to pain. This can affect the quality of education and research output, ultimately impacting the academic institution (Alharbi, 2023; Tembo et al., 2023).

Prevention and management of musculoskeletal disorders

Ergonomic interventions

Improving ergonomics in the workplace is essential for preventing musculoskeletal disorders (MSDs) among academic staff. Universities should invest in adjustable chairs, desks, and computer monitors that promote proper posture. Additionally, providing training on ergonomic principles, such as the correct way to sit and position a computer screen, can help academic staff minimize the risk of developing MSDs.

Regular breaks and physical activity

Academic staff should be encouraged to take regular breaks from sitting or standing to stretch and move. Incorporating physical activity into the workday, such as walking or performing light exercises, can help alleviate muscle tension and improve circulation.

Workload management

Universities should consider strategies to reduce the workload of academic staff, such as hiring additional support staff or using technology to streamline administrative tasks. A balanced workload can help alleviate the stress and physical strain that contribute to the development of MSDs.

Stress management

Providing access to mental health support and stress management programs can help academic staff cope with the pressures of their work. Reducing stress can prevent muscle tension and decrease the risk of musculoskeletal disorders (MSDs), such as tension headaches and neck pain.

REVIEW OF LITERATURE

Studies have consistently shown a correlation between job satisfaction and MSDs. For instance, a study by Yang et al. (2022) found that employees with higher job satisfaction were less likely to report musculoskeletal

pain, particularly in the lower back and neck regions. In their study among nursing aides, they reported that lower job control was associated with higher psychological job demands, and lower social support was linked to more severe MSDs ($p < 0.001$). Among the MSDs reported by nursing aides, lower back pain was the most serious. Additionally, factors such as nationality, age, exercise habits, chronic diseases, worksite, lack of rest time, lack of assistive devices, low coworker support, and high psychological job demands significantly affecting MSDs (Keyaerts et al.,2022; Yang et al., 2022). The study highlighted that job satisfaction has a protective effect against the onset of MSDs, potentially due to lower levels of stress and better coping mechanisms.

Similarly, a study conducted by Ojoawo et al. (2020) in Ondo State reported that academic staff with higher levels of job satisfaction experienced fewer musculoskeletal problems compared to those with lower satisfaction. Their study revealed that 86.4% of the respondents reported a 12-month prevalence of work-related musculoskeletal disorders (WRMSDs). Sixty-one percent (61%) reported WRMSDs in the previous 7 days, with the neck being the most affected body part (55.9%). The majority of respondents (86.4%) indicated that the pain was caused by work. There was a significant negative correlation between pain intensity and each of the following factors: work experience ($r = -0.289$, $P = 0.026$), job cadre ($r = -0.312$, $P = 0.016$), and extra working hours ($r = -0.372$, $P = 0.004$). This study emphasized the importance of addressing both the physical and psychosocial aspects of the work environment to reduce the incidence of MSDs among university staff.

In the Nigerian context, limited research exists on the correlation between job satisfaction and musculoskeletal disorders among academic staff (Efegoma et al., 2022). However, studies conducted in other developing countries have shown that poor job satisfaction, combined with excessive workload and limited control increases the risk of developing MSDs (Ayaz et al., 2023; Bezzina et al., 2023). Given the demanding nature of academic work in Nigeria, it is likely that similar trends would be observed among academic staff in Benue State.

In a related study among librarians by Popoola and Fagbola (2023) titled "Work Motivation, Job Satisfaction, Work-Family Balance, and Job Commitment of Library Personnel in Universities in North-Central Nigeria," it was found that work-family balance, work motivation, and job satisfaction had a significant effect on the job commitment of the respondents. The study reported that job satisfaction had the most significant effect (41%) on job commitment.

The authors recommended that university administrators, particularly policymakers in the education sector, should pay adequate attention to work-family balance, work motivation, and job satisfaction when planning to improve the job commitment of their employees (Popoola and Fagbola, 2023).

METHODOLOGY

The study employed a cross-sectional design among academic staff in four universities in Benue State, namely Benue State University Makurdi, Joseph Sarwuan Tarka University Makurdi, University of Mkar, and Federal University of Health Sciences Otukpo. The sample size was calculated to be 352. A multi-stage sampling method was used to proportionately allocate participants based on the number of staff in the universities. Subsequently, purposive sampling was conducted to recruit respondents from their various departments. Data were collected from October 1, 2023, to January 31, 2024.

The Musculoskeletal Health Questionnaire (MSK-HQ) was used to measure the dependent variable (MSD), specifically musculoskeletal pain, ache, or discomfort in various body regions, including the neck, shoulders, upper back, elbows, wrists/hands, lower back, one or both hips and thighs, one or both knees, and one or both ankles. The questionnaire consisted of 14 items rated on a Likert scale, with options ranging from "Not at all" (4), "Slightly" (3), "Moderately" (2), to "Very severe" (1), depending on the respondents' musculoskeletal health.

Job satisfaction (the independent variable) was measured using a 10-item Likert scale instrument developed by the researcher. The questions were rated as follows:

1 - Strongly Disagree, 2 - Disagree, 3 - Agree, and 4 - Strongly Agree. The interpretation of the Likert scale means score was categorized as follows: 1.0-1.75 (Strongly Disagree), 1.76-2.50 (Disagree), 2.51-3.25 (Agree), and 3.26-4.00 (Strongly Agree). The questionnaire was validated by five experts: three from the Department of Human Kinetics and Health Education and two from the Department of Science Education at Benue State University Makurdi.

The reliability of the questionnaire was tested among 50 academic staff at Federal University Wukari in Taraba State to avoid bias and data contamination. The Cronbach's alpha for the musculoskeletal health assessment was ($\alpha = 0.724$), and that for job satisfaction was ($\alpha = 0.722$). The questionnaires were self-administered to all selected academic staff (from graduate assistants to professors) in the four universities in Benue State by five research assistants using multi-stage sampling. The respondents were proportionately distributed according to the population of the universities as follows: Benue State University Makurdi (726 staff, 136 respondents), Joseph Sarwuan Tarka University Makurdi (802 staff, 150 respondents), University of Mkar (219 staff, 41 respondents), and Federal University of Health Sciences (134 staff, 25 respondents), making a total of 1881 staff and 352 respondents.

However, out of 400 questionnaires distributed, 359 were retrieved, and 355 (representing 88.75%) were adequately filled and used for analysis. Descriptive statistics were computed using frequencies with percentages for categorical variables. Spearman Rank correlation was employed to show the relationship between the dependent and independent variables, with a P-value of $< .05$ considered statistically significant.

RESULTS AND DISCUSSION

The results of this study show that the relationship between job satisfaction and musculoskeletal disorders among academic staff in Benue State is characterized by a high negative correlation, as evidenced by $r=-.524$, $p<0.05$, $n=355$. This result indicates that higher levels of

Table 1. Age distribution of respondents.

Age	Frequency	%
21-30 years	5	1.4
31-40 years	136	38.3
41-50 years	68	19.2
51 years & above	146	41.1
Sex		
Male	230	64.8
Female	125	35.2
Rank		
Graduate assistant/assistant lecturer	53	14.9
Lecturer 11/Lecturer 1	110	31.0
Senior lecturer	112	31.5
Associate professor/professor	80	22.5
Total	355	100

job satisfaction are associated with a decreased prevalence of musculoskeletal disorders among academic staff in universities in Benue State. Conversely, low levels of job satisfaction are associated with a higher prevalence of musculoskeletal disorders. Table 1 shows the age distribution of respondents.

Since the p-value is less than the alpha value of 0.05, the null hypothesis is rejected, implying that job satisfaction has a significant negative relationship with musculoskeletal disorders among academic staff in universities in Benue State.

This finding aligns with a study among emergency nurses at the University of Massachusetts Lowell, where the results revealed that work schedule and job satisfaction levels were significantly negatively associated with MSDs in different body regions (Bazazan et al., 2019). Furthermore, a study by Lachowski et al. (2017) in Poland among foresters confirmed a significant relationship between job satisfaction and the occurrence of musculoskeletal disorders, indicating that lower levels of job satisfaction are associated with more frequent experiences of musculoskeletal disorders.

However, another study among staff at Allameh Bohlool Gonabadi Hospital in Iran found no significant relationship between musculoskeletal symptoms and job satisfaction; nonetheless, musculoskeletal symptoms were more prevalent in individuals with unfavorable job satisfaction (Gharibian et al., 2023; Kliniec et al, 2023).

The correlation between job satisfaction and musculoskeletal disorders among academic staff in universities in Benue State is likely influenced by a combination of psychosocial and physical factors. Academic staff in Nigerian universities often faces heavy workloads, inadequate resources, and limited opportunities for career advancement, and poor work-life balance, all of which can contribute to job dissatisfaction (Akah et al., 2022).

According to the Job Demand-Control (JDC) and Effort-Reward Imbalance (ERI) models, these psychosocial stressors may increase the likelihood of MSDs through heightened stress levels, muscle tension, and reduced physical activity.

Furthermore, a lack of adequate support from management, limited control over workload, and perceptions of inadequate rewards may exacerbate the risk of MSDs among academic staff (Soares et al., 2020). Addressing these factors through improved job satisfaction could lead to a reduction in the prevalence of musculoskeletal disorders, thereby enhancing the overall well-being of academic staff. Table 2 shows the correlation coefficient on the relationship between job satisfaction and musculoskeletal disorders among academic staff of Universities in Benue State.

Conclusion

The correlation between job satisfaction and musculoskeletal disorders among academic staff in universities in Benue State is characterized by a high significant negative correlation. Theoretical models, such as the JDC and ERI models, provide valuable insights into the mechanisms by which psychosocial stressors contribute to the development of musculoskeletal disorders. Improving job satisfaction by addressing workload, promoting work-life balance, enhancing job control, and providing adequate rewards may help reduce the incidence of musculoskeletal disorders among academic staff. Future research should focus on empirical studies that explore this correlation in greater

Table 2. Correlation coefficient on the relationship between job satisfaction and musculoskeletal disorders among academic staff of Universities in Benue State.

Correlation	Job satisfaction	Musculoskeletal disorder	
Job satisfaction	Spearman's rho	1.000	-0.524
	Correlation Sig.(2-tailed)	-	0.000
	N	355	355
Musculoskeletal disorder	Spearman's rho	-0.524	1.000
	Correlation Sig.(2-tailed)	0.000	-
	N	355	355

depth, particularly within the Nigerian context, to inform policies aimed at improving both job satisfaction and physical health outcomes for academic staff.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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